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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/576,731	05/23/2000	William Dean Bauman	DP-300043	4741

7590 11/14/2003

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EXAMINER	
COMPTON, ERIC B	
ART UNIT	**PAPER NUMBER**
3726	

DATE MAILED: 11/14/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Offic Action Summary	Application No. 09/576,731	Applicant(s) BAUMAN ET AL.
	Examiner Eric B. Compton	Art Unit 3726

-- The MAILING DATE of this communication appears on the cover sh et with the c rrespondenc address --

Peri d for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 October 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, and 3-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' Admitted Prior Art (AAPA) in view of U.S. Patent 5,878,496 to Liu et al.

AAPA, as found on pages 1-6 of the specification, discloses a prior art process for forming a metal roller bearing comprising forming a steel blank by either warm forging, hot forging, cold forging, and machining. As shown in Figure 1, various grinding processes form the specific bearing surfaces of the blank. AAPA also discloses that it is known to form a bearing having a crown surface. *See* page 5, lines 15-16.

However, AAPA does not disclose hard turning to form the inner and outer bearing surfaces.

Liu et al disclose forming a metal cylindrical bearing roller, consisting of the steps of:

obtaining a hardened metal cylindrical blank having end face surface, a lateral surface defining an outer diameter, and a centered circular bore, said bore having an inner surface defining an inner diameter (*see* Figure 3, Claim 7).

hard turning the surface of the blank to a specified outer diameter (Col. 8, lines 10-14). Liu et al teach turning the inner surface of the bore rather than grinding, but discuss other processes that may be utilized "such as facing, milling, boring, broaching, drilling, and other related techniques for material removal." Col. 9, lines 39-41. Grinding and honing are disclosed as material removal process known to the inventors and thus are at least contemplated by the invention. Col. 1, line 45.

Regarding claim 1, it would have been obvious to one of ordinary skill in the art, at the time of invention, to have formed the cylindrical (metal roller) bearing of AAPA by hard turning the inner and outer bearing surfaces without grinding, in light of the teachings of Liu et al, in order to produce a bearing "eliminating rough machining, grinding and superfinishing [as] steps in the [conventional] production of the bearing race ..." Col. 9, lines 11-34). Note: this is precisely the motivation behind Applicant's invention. *See* Specification, page 6, lines 17-20.

Regarding claim 3, AAPA discloses providing a steel blank formed by either forging or machining.

Regarding claim 4, AAPA notes that heat treating of the blank prior to finishing is known (see page 8, lines 11-15). Liu et al also note heat treatment of the workpiece.

Regarding claims 5-6, AAPA disclosed that it is known to forge the blank. Therefore, a flash piece is formed that must be subsequently removed. The prior art

teaches grinding to finish the inner surface of the bore. This operation inherently will remove the flash. Liu et al teach turning the inner surface of the bore rather than grinding, but discuss other processes that may be utilized "such as facing, milling, boring, broaching, drilling, and other related techniques for material removal." Col. 9, lines 39-41. Grinding and honing are disclosed as material removal process known to the inventors. Col. 1, line 45.

Regarding claim 7, Official Notice is taken that diamond-honing machinery is known in the art. *See* also Liu et al, Col. 5, lines 52+.

Regarding claim 8, AAPA notes that forming an incised cross-hatched pattern on the inner surface of the bore is known (see page 2, lines 18-20).

Regarding claim 9, Official Notice is taken that the use of computer numerically controlled (CNC) lathes is well known in the art of manufacturing.

Regarding claims 10-11, the specification notes that, "The steps of hard turning of the surface of the bore and the lateral surface of the blank can be carried out in either order ..." (page 9, line 15-16). Therefore, it would have been obvious to a skilled artisan to perform these steps in either order since it has no effect on the implementation of the invention.

Regarding claim 12, Official Notice is also taken that cubic boron nitride or ceramic cutting coated tools are well known in the machining arts to extend the life of the tool. *See* also Liu et al, Col. 5, lines 52+.

Regarding claim 13, Liu et al suggests that the hard turning of the surfaces can be carried out in a single operation. See Col. 8, lines 11-14 (disclosing "***a*** turning operation") (emphasis added).

Regarding claim 14, it is inherent that the end face surfaces of the blank correspond to the end face surfaces of a cylindrical bearing roller.

Response to Arguments

3. Applicant's arguments filed October 6, 2003, 2003, have been considered but are not found persuasive.

Applicant first argues that the rejection based on AAPA and Lie et al ("Liu") does not teach or suggest hard turning the lateral surface of the blank to include a radial crown, focusing generally on the Liu reference only. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

AAPA, as found on page 5, lines 15-16 of the specification, notes "In the final step 1-F [of the prior art method depicted in Figure 1], the ***bearing crown*** is ground with high precision requirements ..." (emphasis added). Undoubtedly, bearings have a lateral surface including a radial crown are known in the art. Liu further discloses "components having a wide variety of shapes can be produced by the process of [the] invention, including flat, cylindrical, compound, and free-form three-dimensional

surfaces such as molds, dies, cams, shafts, lead screws, components for nuclear reactors, and engine component surfaces." Col 9, lines 44-49. The Examiner previous made a prima facie showing of obviousness to form the bearing of AAPA by hard turning the inner and outer bearings, in light of the teachings of Liu, in order to produce a bearing "eliminating rough machining, grinding and superfinishing [as] steps in the [conventional] production of the bearing race ..." Col. 9, lines 11-34). Note: this is precisely the motivation behind Applicant's invention. *See* Specification, page 6, lines 17-20. Liu is directed to the method of producing machine parts, including bearings; not necessarily the exact structure of a bearing as claimed by Applicant. However, the fact that Liu does not specifically disclose a bearing having a lateral surface including a radial crown, in no way teaches away from bearing of AAPA.

Applicant's second argument is that the Liu does not disclose that the inner surface of the bore is honed, arguing that since "honing" was specifically omitted from the machining techniques disclosed that it is not within the purview of "other related techniques for material removal."

Applicant discloses on page 8-9, lines 22-1 "the surface of the bore is hard turned to a specific inner diameter, using for example, a diamond honing machine such as an Accu-Cut machine ..." Therefore, the honing process disclosed by Applicant is a hard turning process. Honing involves using "a tool with a rotating abrasive tip for enlarging holes to precise dimensions." *See* Dictionary.com (hone, definition 2) (attached); *Cf.* Liu, Figure 3 & 5, lines 44+ (disclosing a rotating tool having an abrasive tip). In Liu, "[t]he bearing surfaces of the races were machine by a turning operation that

employed that employed a CBN tool ..." Col. 8, lines 10-12. "[T]he preferred embodiment of the present invention is to machine the race 10 using a CBN, diamond , or ceramic material for the tool insert 12 ..." *Id.* at lines 40-42. Thus, both Applicant and Liu contemplate hard turning the inner bearing surface with a tool having a diamond abrasive. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Therefore, Examiner maintains the rejections of the claims based on the combined teachings of AAPA and Liu.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B. Compton whose telephone number is (703) 305-0240. The examiner can normally be reached on M-F, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter B. Vo can be reached on (703) 308-1789. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1148.

Eric Compton
Patent Examiner
A/U 3726

PETER VO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700

November 3, 2003